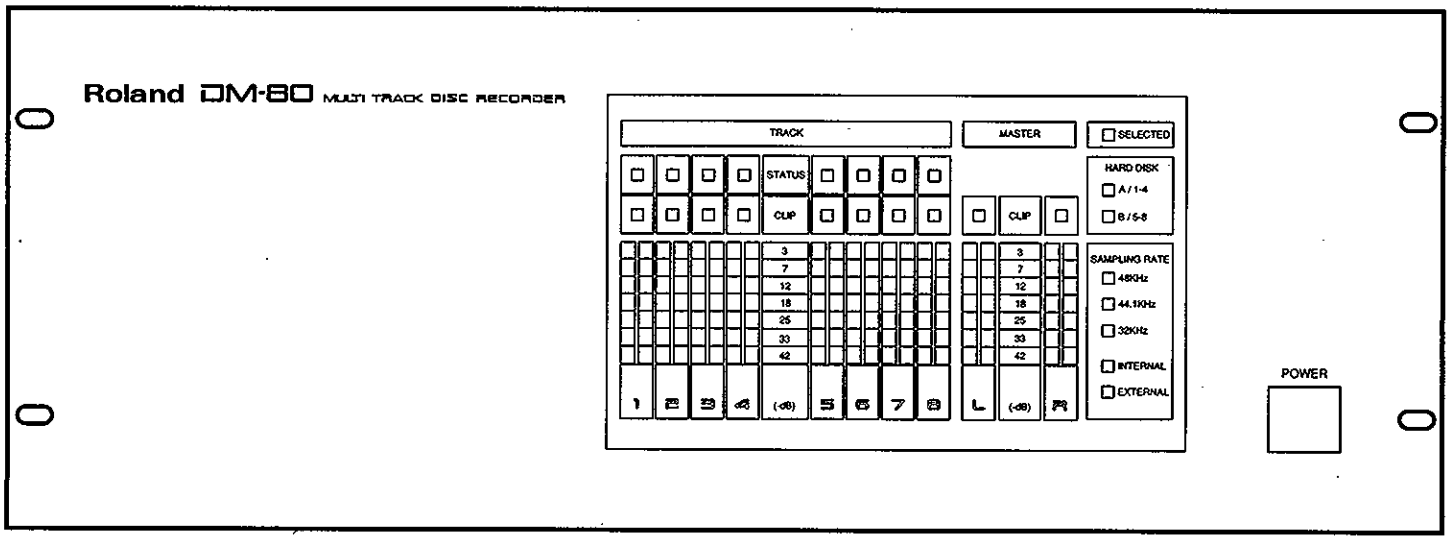
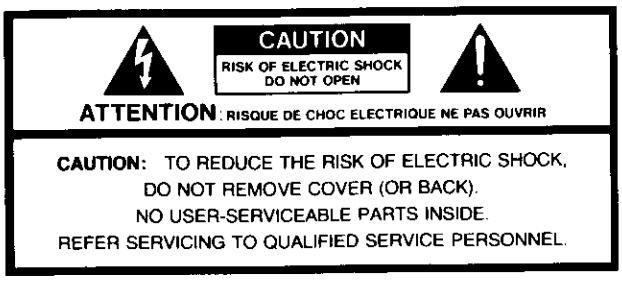
Roland

MULTI TRACK DISC RECORDER

DM-80

OWNER'S MANUAL




CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
ATTENTION: RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS.

IMPORTANT SAFETY INSTRUCTIONS

WARNING — When using electric products, basic precautions should always be followed, including the following:

1. Read all the instructions before using the product.
2. Do not use this product near water — for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.
3. This product should be used only with a cart or stand that is recommended by the manufacturer.
4. This product, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
5. The product should be located so that its location or position does not interfere with its proper ventilation.
6. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.
7. Avoid using the product where it may be affected by dust.
8. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.
9. The power-supply cord of the product should be unplugged from the outlet when left unused for a long period of time.
10. Do not tread on the power-supply cord.
11. Do not pull the cord but hold the plug when unplugging.
12. When setting up with any other instruments, the procedure should be followed in accordance with instruction manual.
13. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
14. The product should be serviced by qualified service personnel when:
    A. The power-supply cord or the plug has been damaged; or
    B. Objects have fallen, or liquid has been spilled into the product; or
    C. The product has been exposed to rain; or
    D. The product does not appear to operate normally or exhibits a marked change in performance; or
    E. The product has been dropped, or the enclosure damaged.
15. Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

SAVE THESE INSTRUCTIONS

For the U.K.

WARNING: THIS APPARATUS MUST BE EARTHED

IMPORTANT: THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.
GREEN-AND-YELLOW: EARTH, BLUE: NEUTRAL, BROWN: LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured GREEN-AND-YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol ⏚ or coloured GREEN or GREEN-AND-YELLOW.

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

The product which is equipped with a THREE WIRE GROUNDING TYPE AC PLUG must be grounded.

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INTRODUCTION

Thank you for purchasing the Roland DM-80 hard disk recorder. The DM-80 is a multi-track disk recording workstation offering state of the art performance and features, at a ground-breaking price. The basic model (DM-80-4) can record and play back any combination of four tracks simultaneously. The expanded DM-80-8 can record and play back any combination of eight tracks simultaneously.

The DM-80 is a full-featured professional system including multiple digital & analog I/Os, built-in disk drives, real time sample rate conversion, and optical disk support.

Utilizing the resources of one of the leaders in digital sound technology, the Roland DM-80 system brings this leading-edge performance and reliability to a new low price point.

Recording time is limited to the amount of hard disk storage. One SCSI bus and disk(s) is required per 4 tracks of audio. The recording format is 16 bits linear; sample rates of 32, 44.1, and 48 kHz may be selected. A 100 megabyte hard disk will allow roughly 18 monophonic minutes of recording time at the CD rate of 44.1 kHz. A single recording or project may be spread over multiple hard disks for even longer recording times.

On playback, the DM-80 uses a trick borrowed from MIDI sequencers and drum machines, where any one recorded section may be re-used any number of times. A re-used section may have different start, stop, fade in, and fade out times than the original use of the section. Also, when a track is silent, no disk memory is used. Therefore, the total playback time may be much longer than the total recorded time.

FEATURES

16-bit multi-track hard disk recording.

Record and play back any combination of four tracks simultaneously (DM-80-4).

Expansion to eight track capability (DM-80-8). One SCSI bus and disk per 4 tracks of audio.

16 bit linear recording format; sample rates of 32, 44.1, and 48 kHz available.

Each 100 megabyte hard disk allows approximately 18 track minutes of recording time at 44.1 kHz.

Recordings can be spread over multiple disks for longer recording times.

PRECAUTIONS

POWER SUPPLY

Be sure to use only the correct AC voltage. Do not connect the DM-80 to the same circuit as devices which produce electrical noise (motors, lighting dimmers, etc.) or devices which consume large amounts of power (heaters, air conditioners, etc.)

Avoid damaging the power cord; do not step on it or place heavy objects on it.

LOCATION

For best performance from the DM-80's hard disk be sure to install the DM-80 rack mount unit in a solid, level location, in an area free from excess vibration or movement.

Operating the DM-80 near devices containing large power transformers (e.g. power amplifiers) may induce hum.

If the room suddenly changes temperature, or if the DM-80 is brought from a cold location into a warm room, condensation may form on the hard disk or other components, which can cause damage. In this situation, wait for one hour or more for the DM-80 to adjust to the new temperature before operating.

Do not subject the unit to temperature extremes (e.g. direct sunlight in an enclosed vehicle). Avoid storing or using the unit in dusty or humid areas, or areas that are subject to high vibration levels.

This unit may interfere with radio and television reception. Do not use this unit in the vicinity of such receivers.

CARE

For everyday cleaning, wipe the unit with a soft dry cloth, or one that as been slightly dampened with water. To remove stubborn dirt use a mild neutral detergent. Afterwards be sure to wipe the unit thoroughly with a soft, dry cloth.

Never use benzene, thinner, alcohol or solvents of any kind to avoid the risk of discoloration or deformation.

OTHER

Do not subject the DM-80 to strong shocks.

Do not press hard on the display or allow it to be hit.

The DM-80 may produce some heat when operating normally.

Always turn off the power to all equipment before making connections with other devices.

Do not allow objects or liquids of any kind to penetrate the unit. In the event of such an occurrence, discontinue use immediately. Contact qualified service personnel as soon as possible.

Should a malfunction occur (or if you suspect there is a problem) discontinue use immediately. Contact qualified personnel immediately.

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HARD DISK HANDLING

A hard disk is a very delicate storage device. Do not subject it to shock or vibration of any kind. Be especially careful not to move or bump the unit while the power is on.

Shut down the DM-80 by using the Shut Down command before turning off the power. After shutting down the unit, wait until the drive has stopped rotating, about 30 seconds, before moving the unit.

It will take several minutes for the hard disk to "boot up" after the power is turned on.

Never turn off the power while the hard disk is being accessed (while any of the hard disk indicators are lit).

If the cooling fan is obstructed, overheating may cause data to be lost or other malfunctions to occur.

When handling external hard disks, etc., refer to the manual for each device.

Roland cannot be responsible for any data lost while using the DM-80. It is strongly suggested that you frequently make backup copies of your hard disk data.

TRANSPORTATION

Always pack the DM-80 in its shipping box or shock-mount rack case. Make sure the drives have stopped rotating before moving the unit. Since disk drives are quite sensitive to vibration, take great precautions to protect the unit from shock and other vibration.

CONVENTIONS

SYSTEM CONFIGURATION

The DM-80 is available in two versions: the DM-80-4 with four tracks and a single 100MB hard disk drive; and the DM-80-8 with eight tracks and two 100MB hard disk drives.

TRACK MINUTES

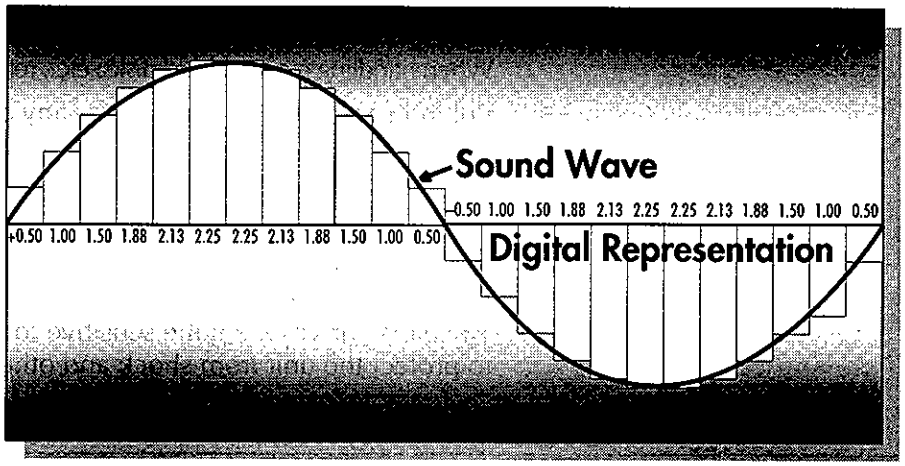
Any mention of recording time refers to track minutes. Track minutes is the total number of minutes available for recording on one track. 10 track minutes means 10 minutes of mono recording, 5 minutes of stereo recording or 2.5 minutes of four track recording. Remember that recording time is utilized differently in a disk system compared to tape, resulting quite often in substantially longer actual project lengths.

HOW THE DM-80 WORKS

The DM-80 is possible because of a series of technological advancements. The most important of these are Digital Recording and Disk Recording.

DIGITAL RECORDING

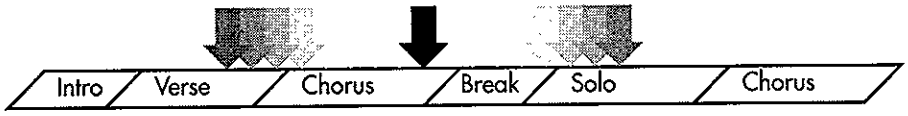
Digital recording, popularized by the advent of the Compact Disc, records sound by storing a series of numbers – a series of digital snapshots. These snapshots are then played back in series, much a like a motion picture. The number of snapshots per second is called the sampling rate. In a CD the sampling rate is 44.1 kHz, which means there are 44100 sonic snapshots every second. A DAT recorder has rates of 48 kHz, 44.1 kHz and 32 kHz. The DM-80 can record and playback at these same rates. The higher the rate, the higher the frequency response.



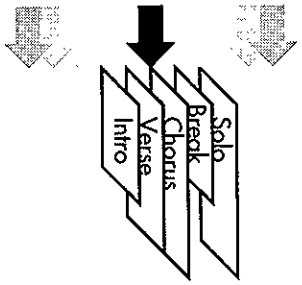
DISK RECORDING

Disk recording means storing digital recordings on a disk rather than a tape. Why is this important? Because it makes possible random access. Random access enables your recording to be played in any order you like. This means any note, measure, background vocal, or even the entire project can be played back instantly, without having to rewind and fast forward a tape. This also means any recording can be played anywhere within the song you like, just like a MIDI sequencer – except here we are working with complete digital recordings. The possibilities are quite profound and we encourage you to experiment and "push the envelope" of musical creativity.

LINEAR TAPE ACCESS:



RANDOM DISK ACCESS:



Another thing to be considered is the issue of the data itself. If over 44 thousand samples per second sounds like a lot of data, you're right. In fact ten seconds of digital audio represents about the same amount of data as the manual you are holding in your hands right now. So we are talking about extremely large amounts of data moving in and out of the DM-80 at very high speeds.

What makes the DM-80 feasible is a big, fast disk drive. Floppy disk? Way too slow, and even if it was fast enough, you'd fill it up after recording 10 seconds. Fortunately, the kind of big, fast disk drives needed for disk recording are now easily available. The DM-80-4 has a 100MB drive built-in, and the DM-80-8 has two 100MB drives. External disk drives can also be used.

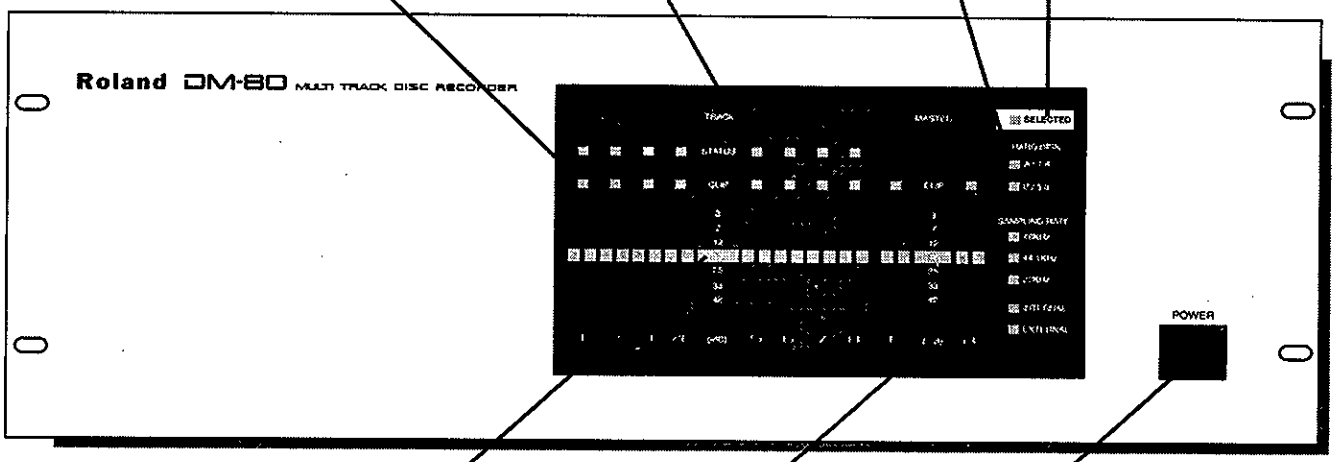
FRONT PANEL CONTROLS AND INDICATORS

CLIP INDICATORS
These LEDs indicate that a track or master level has exceeded the digital maximum (0dB).

STATUS INDICATORS
These indicators show the status of the eight tracks: Play, Mute, or Record.

HARD DISK INDICATORS
These indicator light to show disk activity.

SELECTED INDICATOR
This indicator lights when control signals are received from the Remote, Fader, or Track Manager software, via the DM Buss .



METER DISPLAY
The LED display on the front panel shows input and output levels for each of the eight inputs and track outputs, plus the stereo outputs of the internal mixer.

The levels shown are either Pre-Fader or Post-Fader, selected by the corresponding display on the Remote or Track Manager software.

SAMPLING RATE INDICATORS
These indicators show the current sample rate and sampling clock source.

POWER SWITCH
This switch turns on the system. The initializing process takes several minutes.

AUDIO CONNECTIONS

The DM-80-4 contains four analog input channels and one stereo digital input channel. The DM-80-8 contains eight analog input channels and two stereo digital input channels. In addition, there are analog and digital mix outputs, plus a direct output for each track (Tracks 5-8, DM-80-8 only).

MIX OUTPUTS

The DM-80 incorporates a built-in 24-bit digital mixer for combining the internal hard disk tracks and four auxiliary inputs to a stereo final mix. This stereo mix is sent to both analog and digital outputs, and is also available as a record input source for bouncing tracks.

The analog outputs use 8x oversampling chips and 20 bit D/A converters. The digital output signal goes to either coaxial pin jacks or XLR connectors.

DIGITAL B INPUT

The DM-80-8 contains two digital inputs. The second digital input (DIGITAL B) is real-time sample rate converted in order to be exactly synchronized to the Project's sample rate.

IMPORTANT: The DIGITAL B input can be used only when a Project's sample rate is 44.1kHz or 48kHz.

DIGITAL I/O

The digital inputs and outputs are compatible with both professional and consumer standards. Two audio channels are encoded on a single connector.

XLR CONNECTORS

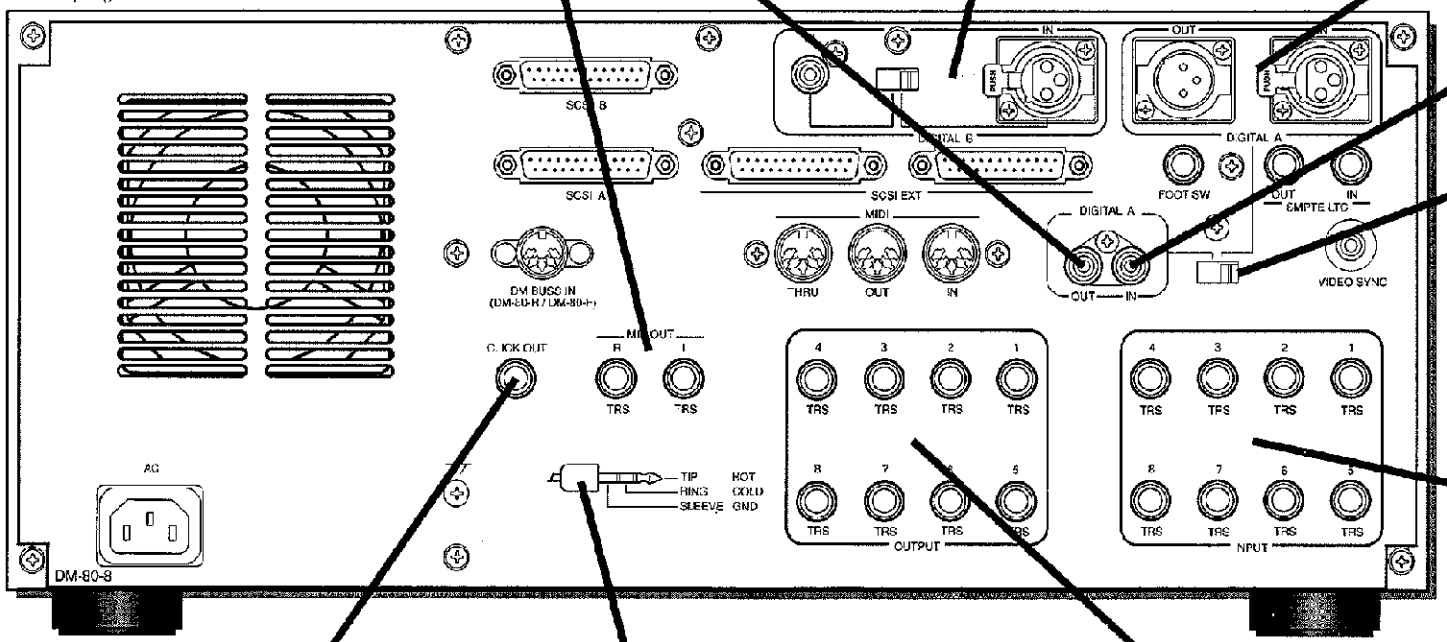
The XLR input and output should be used when connecting the DM-80 to professional equipment that utilizes the AES/EBU digital standard, such as professional-level digital tape recorders and samplers.

COAXIAL CONNECTORS

The Coaxial input and output is a standard pin-jack found on consumer oriented digital equipment, such as DAT recorders.

SELECT SWITCH

This selects which I/O connectors will be used: XLR or Coaxial.



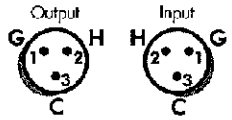
ANALOG INPUTS

The analog inputs are balanced or unbalanced, +4 dBm. 64x oversampling delta-sigma A/D converters are used.

CLICK OUT

Connect this output in order to monitor the metronome.

PIN ASSIGNMENT



The 1/4" phone jacks follow the tip-ring-sleeve wiring format as shown on the rear panel. XLR Connectors use the format shown at left. **Before making any connections, confirm pin assignment compatibility with all other devices.**

DIRECT ANALOG OUTPUTS

The DM-80 contains one analog "direct" output per track for connection to an external mixer or effects device.

DATA CONNECTIONS

SCSI A & B

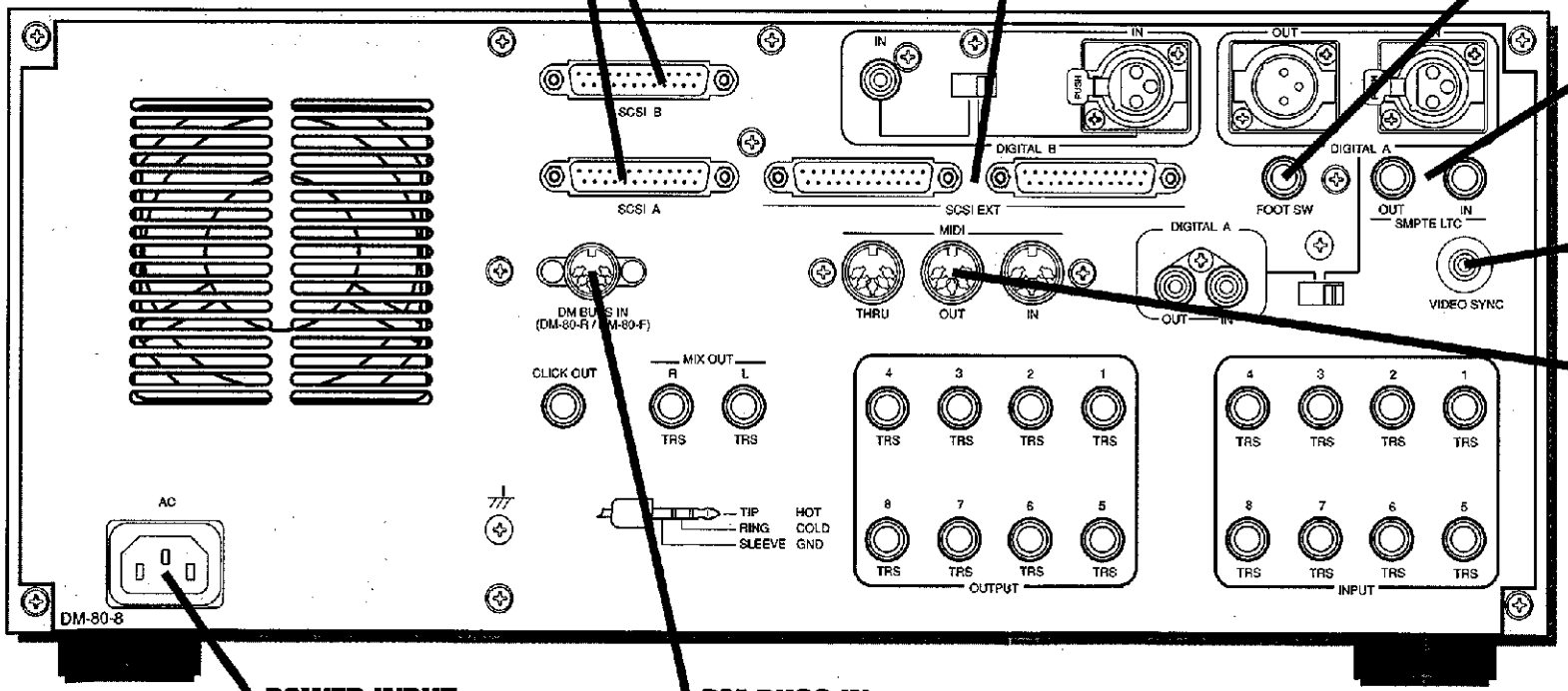
The DM-80 uses SCSI interfaces to connect external disk drives for real-time recording. SCSI A is used for Tracks 1-4, SCSI B for Tracks 5-8 (DM-80-8 only).

For additional information, please check the SCSI Configuration section at the end of this manual.

SCSI EXT

A third pair of SCSI connectors (In and Out) are provided for non real-time communication such as tape backup, and other applications available in the future.

For more information, see the SCSI Configuration at the end of this manual.



FOOT SWITCH

The foot switch input can be used for punching in or out of Record mode or for entering the tempo in Tap Tempo mode. Use a Roland DP-2/6, Boss FS-5U or equivalent pedal. The switch polarity is checked automatically on power up.

SMPTE LTC

I/O for longitudinal time code. The DM-80 can synchronize to SMPTE while sending MIDI Time Code (MTC) or MIDI clocks (with Song Position Pointer).

VIDEO SYNC

This input is for a video signal, to slave the sampling rate clock to house video.

MIDI

MIDI is used for several important functions:

TIMING

The DM-80 can synchronize to MIDI Time Code (MTC) while transmitting MIDI clocks (with Song Position Pointer), or synchronize to SMPTE while transmitting MTC.

EXTERNAL METRONOME

MIDI notes can be used as the metronome. Consult the Metronome section of the DM-80-R or Track Manager manuals for information.

TRIGGER MODE

In Trigger mode, Phrases can be triggered by MIDI keynotes. There are several creative possibilities suggested by this, as described in the Trigger Mode section of the DM-80-R and Track Manager manuals.

POWER INPUT

Connect power cable here.

DM BUSS IN

The DM Buss Input is used to connect the DM-80-R Remote Controller, DM-80-F Fader Unit or a computer running the Roland Track Manager software.

Note: Either the DM-80-R remote or the Track Manager software may be used to control the DM-80 but not both simultaneously.

INSTALLATION

PLACEMENT

LOCATION

For best performance from the DM-80's hard disk be sure to install the DM-80 rack mount unit in a solid, level location, in an area free from excess vibration or movement.

Operating the DM-80 near devices containing large power transformers (e.g. power amplifiers) may induce hum.

Note: If the room suddenly changes temperature, or if the DM-80 is brought from a cold location into a warm room, condensation may form on the hard disk or other components, which can cause damage. In this situation, wait for one hour or more for the DM-80 to adjust to the new temperature before operating.

POWER SUPPLY

Be sure to use only the correct AC voltage. The DM-80 power supply is designed for use in the country of purchase. If you plan to use the DM-80 in another country, a power converter or other accessories may be required. Please contact a Roland service center for additional information.

Do not connect the DM-80 to the same circuit as devices which produce electrical noise (motors, lighting dimmers, etc.) or devices which consume large amounts of power (heaters, air conditioners, etc.)

HOOKUP

BEFORE MAKING CONNECTIONS

Use the cables packed with the DM-80-4/8 and the DM-80-F. Use of other cables may result in damage to the units.

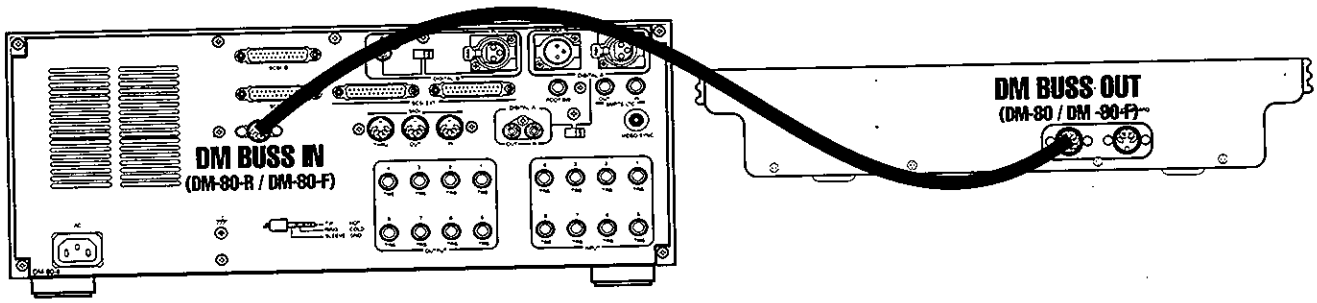
When making connections, be sure the DM-80-4/8 is powered off. Do not apply power until after all connections have been made. If not, the DM-80 system will not function.

Never disconnect any DM BUSS cable while operating the DM-80 system. If a DM BUSS cable is disconnected and then re-connected, the system will cease functioning. You will need to power off the unit before it can be restarted. If this occurs, all unsaved data will be lost.

The above conditions also apply to a system being controlled by Track Manager software. Never disconnect any cable between the computer and DM-80 system—whether DM BUSS, MIDI or RS-422—or the system may cease functioning. You will need to power off the computer and DM-80 and restart. If this occurs, all unsaved data will be lost.

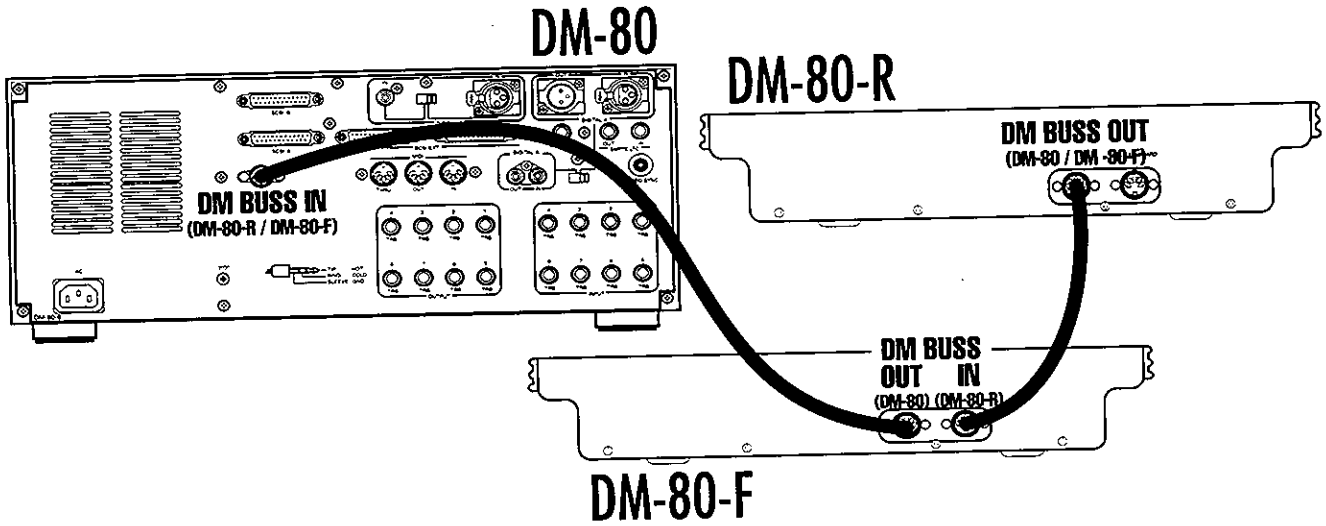
CONNECTING THE DM-80-R REMOTE

Connect the cable included with the DM-80-4/8 into the jack labelled DM BUSS IN. Connect the other end of the cable to the jack labeled DM BUSS OUT on the rear panel of the remote.



CONNECTING THE DM-80-F FADER UNIT

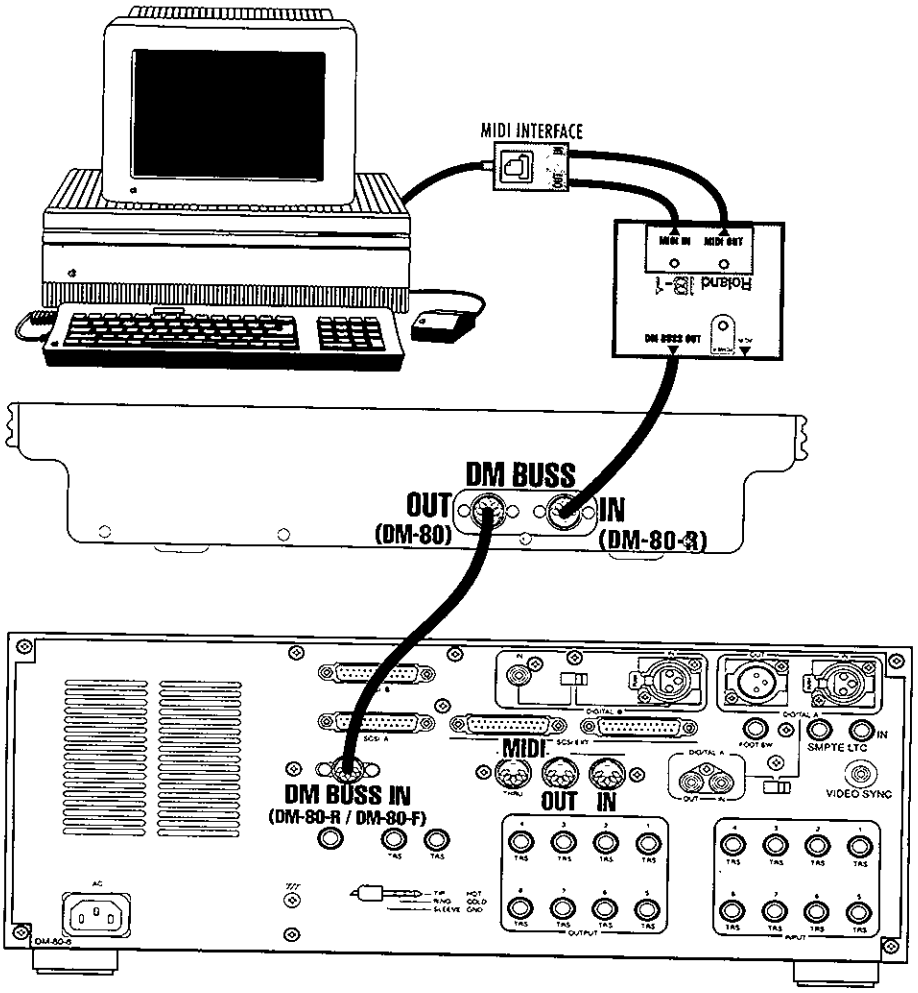
Connect the cable included with the DM-80-4/8 to the jack labeled DM BUSS IN. Connect the other end of the cable to the jack labeled DM BUSS OUT on the rear panel of the fader unit. Connect the DM-80-R or Track Manager software to the DM-80-F's DM BUSS IN Connector, using the cable supplied with the DM-80-F.



CONNECTING ROLAND TRACK MANAGER SOFTWARE

Track Manager duplicates the functions of the DM-80-R on the Apple Macintosh screen. Either the Track Manager software or the DM-80-R can be used – but not both simultaneously.

Using the IB-1 interface box (option) and cables supplied with the DM-80-4/8 and fader unit if you are using one , connect the DM-80 system as shown below.



If you are planning to utilize a single Macintosh for both DM-80 control and music data such as created by a MIDI sequencer, we recommend using two MIDI interfaces—one for the DM-80 and the other for your other MIDI instruments.

Note: Be careful not to confuse the DM BUSS and MIDI ports. The MIDI ports are used only for actual MIDI data (MIDI clock and time code, notes, controllers, etc.)

USING MORE THAN ONE DM-80 UNIT

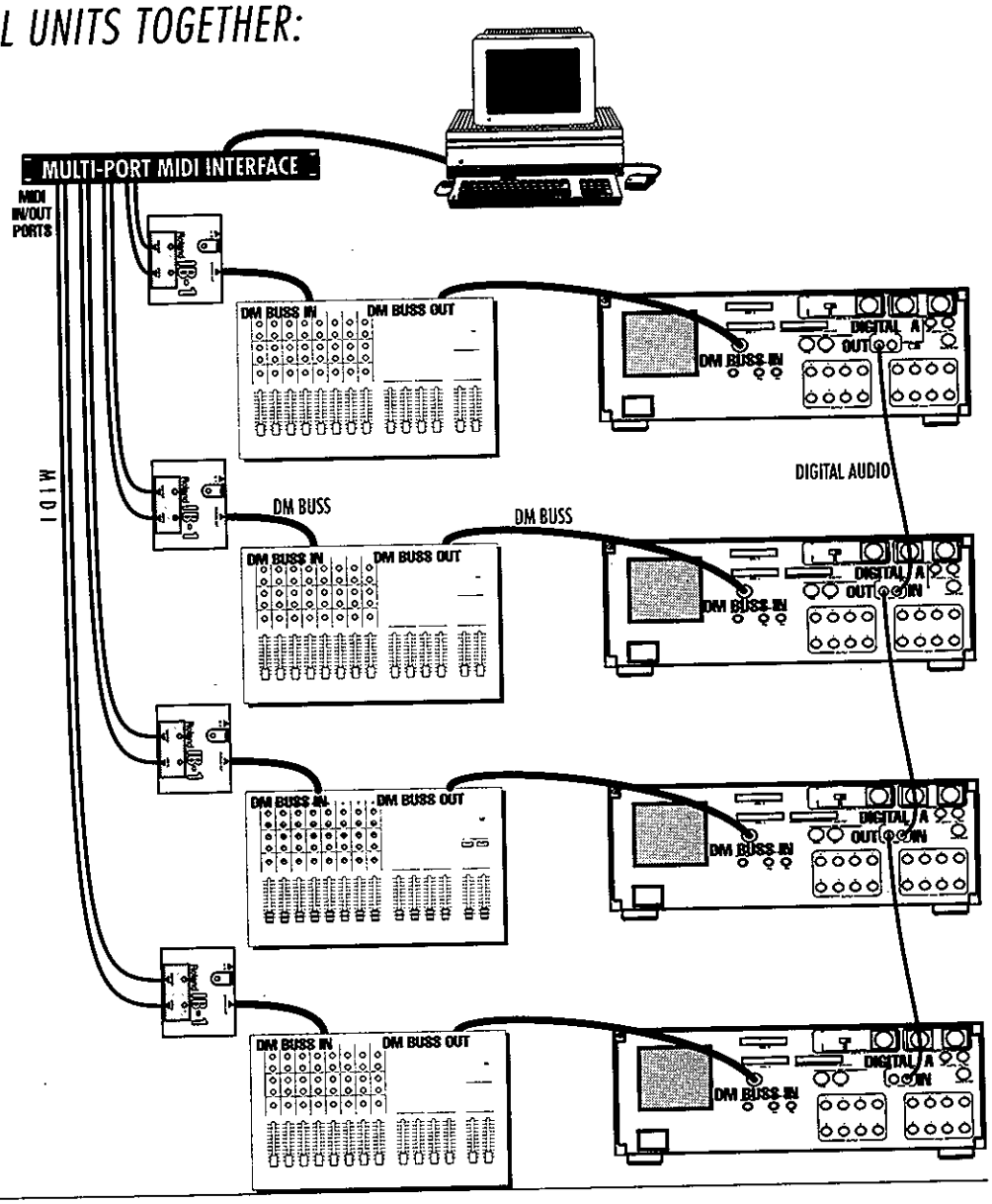
Up to four DM-80 rack units can be operated simultaneously as one unit with up to 32 tracks, controlled from an Apple Macintosh computer running Track Manager software. A multi-port MIDI interface, such as the MIDI time Piece from Mark of the Unicorn is recommended.

Multiple DM-80-F Fader Units can also be used. Use the diagram below as a connection reference.

CASCADING AUDIO

You can use the Aux inputs to cascade the audio from each unit into a final stereo output. Connect as shown below and check the Track Manager Owner's Manual section titled "Cascading Audio" for the setup procedure.

FOLLOW THE DIAGRAM BELOW WHEN CONNECTING SEVERAL UNITS TOGETHER:



CONNECTING EXTERNAL DISK DRIVES

You can expand recording time beyond the DM-80's internal capacity of 18 track minutes @ 44.1 kHz (double for a DM-80-8) by connecting additional disk drives.

With a DM-80-4, connect drives to the SCSI A port. With an eight track DM-80-8, connect drives *in pairs;* one to SCSI A and the other to SCSI B.

Fixed and optical disk drives can be used. Please check the SCSI CONFIGURATION section, starting on Page 18.

CONNECTING AUDIO

There are a number of audio inputs and outputs in the DM-80. The proper connections depend on your particular application.

Any of the inputs (analog or digital) can be routed to any of the tracks for recording, or to the mixer's auxiliary inputs for combining in the master mix.

ANALOG AUDIO

The DM-80 has four inputs and four outputs (eight each for the DM-80-8). In addition, the output of the mixer appears at the Mix Output jacks.

All analog audio connections are balanced at +4dBm using 3-conductor phone jacks. These jacks also accept unbalanced connections. When you use them in an unbalanced configuration, the output level becomes -2dBm.

Note: The input levels can be changed to -10dBm by an Authorized Roland Service Center. Please contact your dealer or Roland for the nearest service center.

DIGITAL AUDIO

The DM-80 features XLR as well as Coaxial inputs and outputs. The DM-80-4 has one input pair (DIGITAL A) and the DM-80-8 has two pairs (DIGITAL A&B). Coaxial or XLR input connectors can be selected using the Select Switch for each input on the rear panel, as shown in the AUDIO CONNECTIONS diagram on page 9. The mixer output appears at either the XLR or Coaxial connector, as selected by the Select Switch.

Note: To record from the DIGITAL A input, remember to select DIGITAL A as the Sampling Clock Source in the System menu.

CONNECTING SMPTE

The DM-80 reads and generates SMPTE Linear Time Code. To slave the DM-80 to SMPTE, connect a SMPTE code source to the SMPTE IN, and select SMPTE as the Timing Base in the System menu.

Note: Be sure to also select the proper frame rate and format.

For more information, check the DATA CONNECTIONS diagram, page 10, and also the sections about SMPTE in the DM-80-R Remote and Track Manager user manuals.

CONNECTING VIDEO SYNC

Video Sync can be used to control the DM-80's Sampling Rate Clock. Connect an NTSC or PAL format video signal to the Video Sync input and set the Sampling Clock Source to VIDEO SYNC in the System menu.

CONNECTING MIDI

MIDI serves several important functions.

MIDI TIME CODE

MIDI Time Code (MTC) can be patched into the DM-80 in two ways:

1) Via the MIDI IN port, if you are using an application that generates MTC, such as Mark Of The Unicorn's Performer or Opcode Vision sequencing software.

2) If you are using Track Manager as the MIDI Time Code master, you can send MTC via the DM BUSS. This means you can send control information and MTC sync from one Macintosh port, leaving the other port free for other tasks.

MIDI CLOCKS

The DM-80 generates MIDI Beat Clocks based on the Tempo Map, which defines the relationship between Minutes:Seconds:Frames and Measures:Beats. MIDI Clocks are output from the MIDI OUT jack.

NOTE TRIGGERS

The DM-80's Trigger Mode provides a method of using MIDI note information to trigger recorded phrases. Trigger notes are defined in the Trigger Mode screen. Notes must be received on the MIDI Control Channel, set in the System Menu.

RECORD TRIGGER

MIDI Continuous Control Change #4 can be used for punching in or out of Record mode. Controller #4 can be selected as the record trigger in the Record Common screen. The control change must be received on the MIDI Control Channel, set in the System Menu.

MIDI METRONOME

MIDI notes can be used as a metronome. The notes are defined in the Metronome window (in record parameters). Notes are transmitted to the MIDI OUT jack, on the MIDI Control Channel set in the System Menu.

MIDI TAP

MIDI notes can be used to enter the tempo in Tap Tempo mode. MIDI notes are defined in the Tap Teach Screen. Notes must be received on the MIDI Control Channel, set in the System Menu.

MIDI Clocks can also be used to calibrate the Tempo Map. The MIDI Clocks option is selected in the Tap Teach screen.

For more information about MIDI, please see the DM-80-R Remote or Track Manager user manuals.

POWER ON SEQUENCE

Interconnected computer devices need to be turned on and off in a particular order. Please observe the following suggestions.

POWER UP

Before turning on the DM-80, be sure to confirm all DM BUSS, SCSI, Audio and MIDI connections. Reduce the audio monitor level.

1 • Power on the *terminated* SCSI devices.

2 • Power on the other, non-terminated SCSI devices. Wait for all drives to come up to speed.

3 • Power on the DM-80.

4 • Power on the computer, if you are using Track Manager software.

5 • Power on any MIDI and SMPTE devices.

6 • Finally, turn on any other audio equipment.

POWER DOWN

Before powering down the DM-80, be sure to save the current Project, and reduce the audio monitor level.

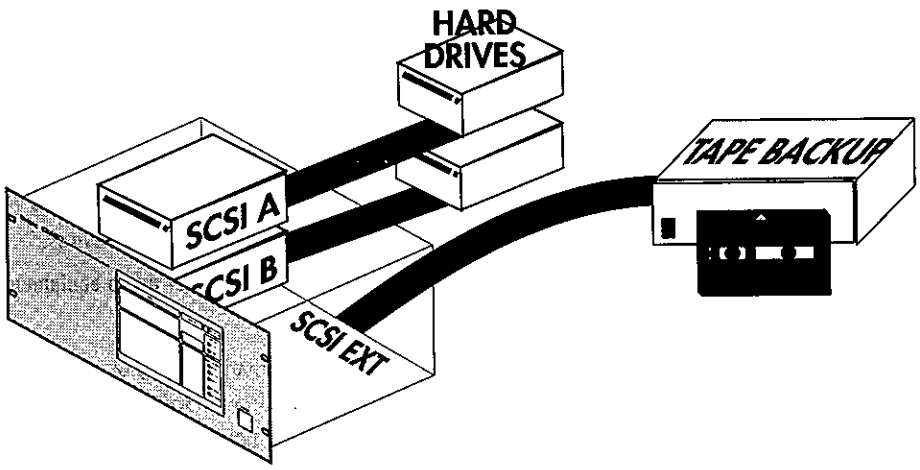
1 • Execute the SHUT DOWN command from the Remote Unit or Track Manager. It will take about 30 seconds for all drives to stop spinning. Check that heads of all external drives have been parked (in other words, not spinning) and eject any removable disks or tapes.

2 • Power off audio devices.

3 • Power off the DM-80

SCSI CONFIGURATION

SCSI stands for Small Computer System Interface. SCSI is a computer industry-standard interface, defined by the American National Standards Institute (ANSI). The DM-80 can be connected to a wide number of devices for recording or high-speed data transfer.



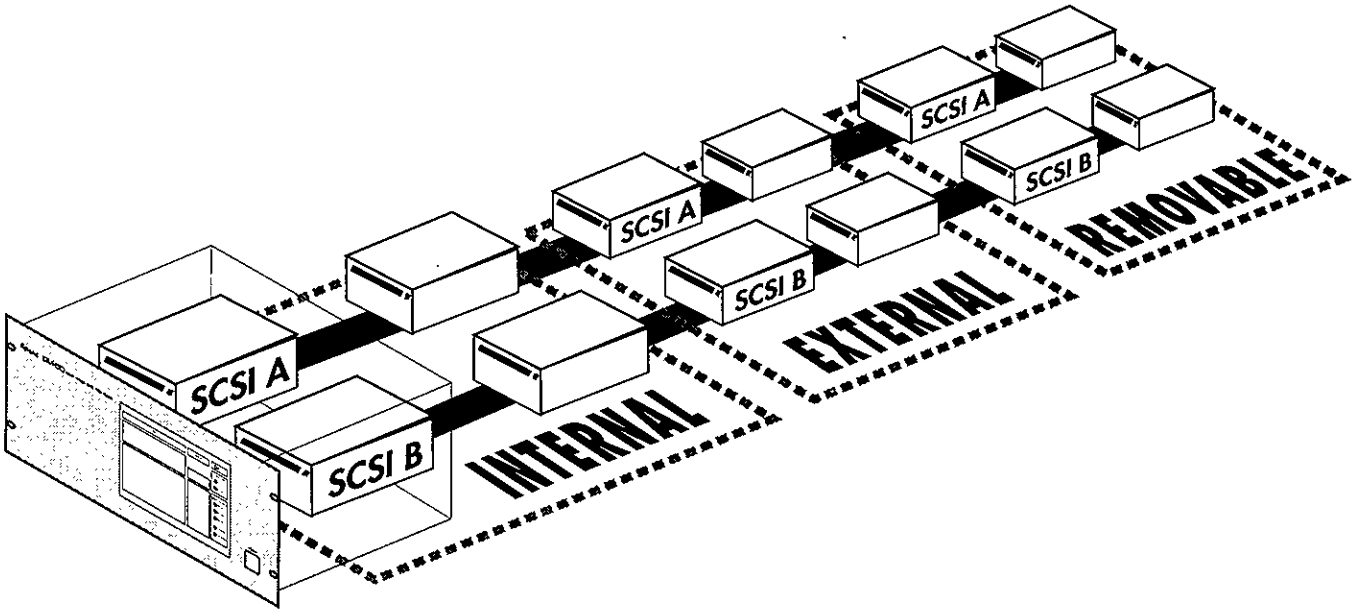
There are several SCSI ports, used for different purposes:

RECORD AND PLAYBACK Use the SCSI A connector to connect additional devices for recording and playback. If you are using a DM-80-8, connect additional drives in pairs; one to SCSI A and the second to SCSI B.

TAPE BACKUP Use the DM-80's SCSI EXT connector for SCSI-based tape backup devices.

ABOUT DISK GROUPS

For Project recording purposes, there are three groups of disk drives on the SCSI A&B busses: Internal, External, and Removable.



INTERNAL

This group contains the DM-80's internal disks, and all other drives formatted as *Internal disks*. The SCSI A disk inside the DM-80 also contains default settings for the system, such as timebase, clock source, SMPTE offset, metronome parameters, etc.

The Internal group contains data for Projects I-1~I-50.

If you want to use additional disks to expand the DM-80's internal disk capacity, these disks will need to be formatted as Internal disks.

EXTERNAL

This group contains all drives formatted as *External* disks. If you have fixed disk drives that you plan to move from one DM-80 system to another, make sure they are formatted as *External*.

The External group contains data for Projects E-1~50.

REMOVABLE

This group contains all Optical drives, formatted as *Removable* disks. The Removable group contains data for Projects R-1~50.

DISK GROUPINGS

Since the DM-80 considers all drives in a group to be one large disk, all drives in the group must be up and running before the DM-80 will recognize the "disk." Specifically:

If a disk formatted as part of a group is not connected to the DM-80, or is connected to the opposite SCSI connector by mistake, the entire group containing that disk will not be available. In this case, shut down the DM-80, correct the connections, and restart.

All disks formatted as *INTERNAL DISKS*, whether inside or outside of the DM-80 rack, must be connected and on-line at all times while the DM-80 is in operation.

If a disk malfunctions, the entire disk group will not be available. In this case you must reformat all the other disks in the group, and all data will be lost.

DISK FORMATTING

Since the DM-80 treats all disks in a group as one large disk, there are several things to be concerned about when formatting a disk.

- **You can add a new disk to an already existing group.**

- **Once a disk is formatted for a group, reformatting the disk for the *same* group causes all the other disks in the group to be reformatted as well.**

- **Once a disk is formatted for a group, reformatting a disk to a *different* group causes the other drives in the original group to become unformatted. You will need to reformat the remaining drives in the original group as well.**

DM-80-8 USERS: **When formatting disks, be sure to format the drive(s) on the SCSI A Bus first, then the SCSI B drives.**

The Internal disk(s) inside the DM-80 rack unit come from the factory formatted as Internal disks. The Demo Project is contained on these disks. Reformatting the Internal group will erase the Demo Project.

BEFORE MAKING SCSI CONNECTIONS

Make sure the power is off before making or changing any SCSI connections to the DM-80. Never connect and/or disconnect cables while the DM-80 is on. The DM-80 cannot recognize such changes and may cause a situation where you cannot save your Project data.

For the most reliable operation, make sure the total length of connecting cable on each SCSI buss does not exceed 6.5 meters, or 21 feet.

SCSI DEVICE NUMBERS

Each DM-80 SCSI port is completely independent. Up to eight SCSI devices can be connected to each SCSI port. Each device must have a unique device number, 0~7, so they can be individually identified on the SCSI bus. Devices with lower ID numbers have higher priority. The DM-80 and its internal hard disk drive each have their own device numbers.

Note: Fixed disk drives with ID=0 can only be formatted as *INTERNAL* disks. Fixed disk drives with other ID numbers can be formatted in either Internal or External drive groups.

CHANGING DEVICE NUMBERS

Most external drives have a switch on the rear panel to set the device number. Follow the instructions included with your drive.

The device numbers of the DM-80 are set to 7 for SCSI busses A and B; the internal disk(s) are set to Device 0. For the SCSI EXT bus, the DM-80 is set to Devices 3 through 6.

Note: For interfacing via MIDI (without SCSI), you do not need to be concerned with device numbers.

TERMINATION

Each DM-80 SCSI port is a completely independent SCSI chain. Each port must be properly terminated for the DM-80 to operate correctly. There must be no more than two terminators in each chain, one at the beginning and one at the end.

- Each DM-80 SCSI port is internally terminated.
- If you connect one device to the DM-80, that device needs a terminator.
- If you connect more than one device, only the device at the other end of the chain should have a terminator. Apple Macintosh computers have terminators built-in. If you are using a Macintosh it should be placed at the end of the chain. Other devices may also have built-in terminators.
- If you connect several DM-80 racks to the SCSI EXT bus for backup, remember that only the units at the ends of the chain should have terminators—the units in the middle should have their terminators removed.

If more than two devices in a single chain have terminators, one or more of them will need to be removed. This can be done by an Authorized Roland Service Center. Please contact your dealer or Roland for the nearest service center.

DISK DRIVE SPECIFICATIONS

For Real-time recording any hard disks or Optical drives must meet minimum standards for access time and sustained data transfer. In other words, they must be very fast.

For backup or non real-time applications, drive speed is not a usage limitation.

For backup, many drives will work, although you probably want to use an optical disk or a tape backup.

The listing of recommended drives enclosed with your DM-80 gives specific information about drives that have been tested with the DM-80. Your dealer may have other, more up-to-date information regarding compatible drives. The following gives general information about the advantages and disadvantages of different types of devices.

HARD DISK DRIVES

Fixed disk drives, commonly known as *Hard Disks*, combine large capacity with high speed at a moderate price. The most common type of drive, hard disks are available in many sizes up to and beyond 1 Gigabyte (1024 Megabytes).

OPTICAL DRIVES

Optical disk drives are well-suited for backup since they store 320MB (57 track-minutes @ 44.1 kHz) *or more* on each side of the disk.

By using the COPY PROJECT command, you can create backups of your Project data onto optical disks.

TAPE BACKUP

4mm and 8mm Tape backup devices provide a cost effective method for making backup copies of hard disk data.

UPGRADES AND SERVICE

SYSTEM SOFTWARE

Roland will periodically release new versions of system software to fix problems or add new features. When software upgrade ROMs are available, you will need to bring your unit to a Roland Authorized Service Center for installation.

EIGHT TRACK UPGRADE (DM-80-E)

A DM-80-4 can be upgraded to eight tracks with the installation of the DM-80-E Expansion Upgrade. The DM-80-E must be installed by a Roland Authorized Service Center. For more information, contact Roland or your nearest Roland Authorized Service Center.

IF THE DM-80 DOESN'T FUNCTION

Before you take your unit for servicing, check and be sure one of the following situations is not causing your problem.

- Check that all cables are connected properly.
- Make DM BUSS, SCSI, MIDI and Serial (RS-422) connections with the power off.
- Make sure all disks in the same group are connected, and that all disks are connected to the proper SCSI connector.
- Never disconnect any cable while the system is on. If this occurs you will be forced to turn off the power to the system, and all unsaved data will be lost.
- Did you power up the system in the proper order? See page 17.

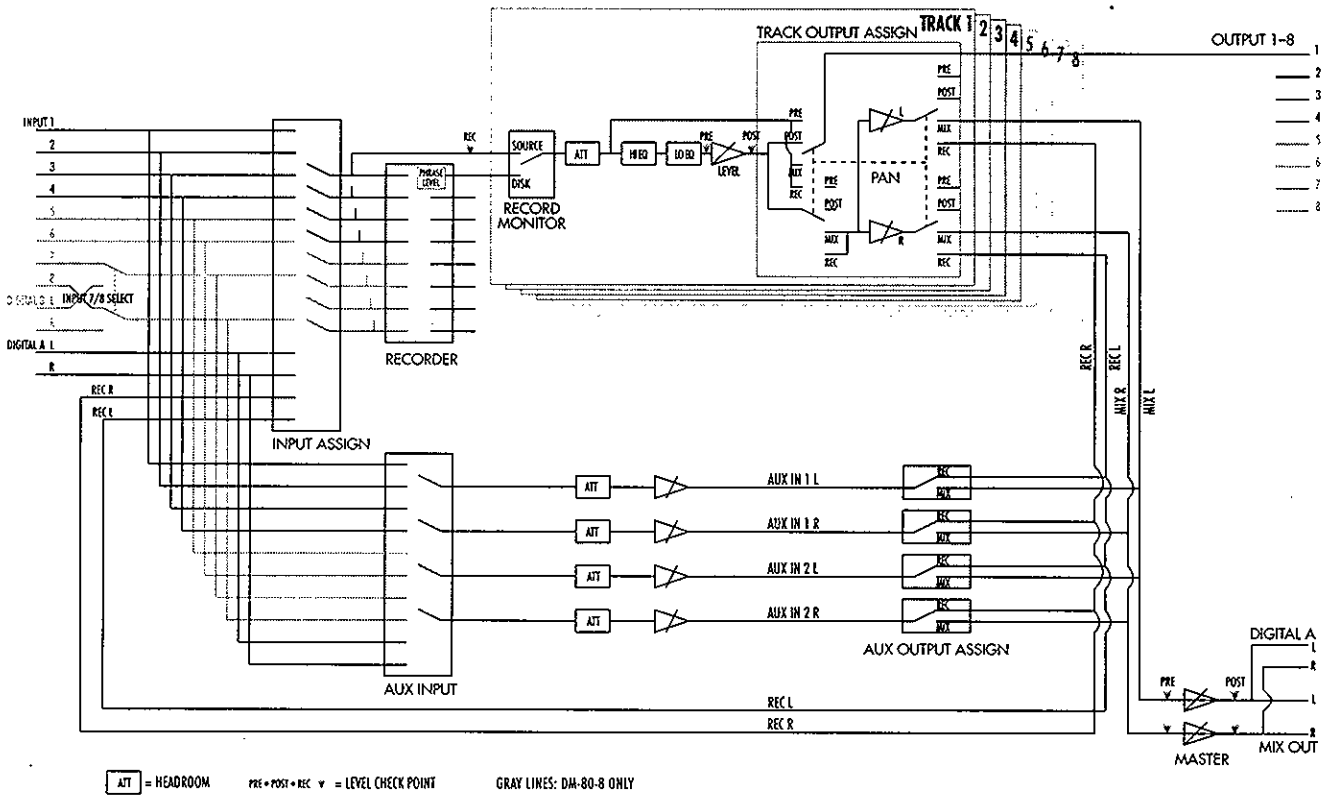
RETURNING FOR SERVICE

The DM-80 has no user-serviceable parts. Attempts by unauthorized personnel to repair or modify the DM-80 will void the warranty. If you have trouble with the unit, you must bring or sent it to an authorized Roland Service center. Consult your dealer or Roland for the nearest service center.

When preparing to ship the unit, first be sure to park all internal drives in the DM-80, as well as any drives connected to it. From the SYSTEM page, press SHUT (F1). Wait until all drives have stopped spinning, approximately 30 seconds, before turning off the power or moving the unit.

Use the original packing material that came with the DM-80 to ship the unit. If the original packaging is not available, use a reinforced, sealable, foam-lined case. Remember, hard disks are fragile devices.

MIXER SECTION BLOCK DIAGRAM



Multi Track Disk Recorder

Model DM-80-4/8

MIDI Implementation

Date : Nov. 7 1991

Version : 1.00

1. MIDI Channel

Transmitting channel and receiving channel are set using the parameter MIDIControl Channel.

2. Recognized Receive Data

2.1 Messages recognized

■ Channel Voice Message

● Note off

Status	Second	Third
8nH	kkH	vvH
9nH	kkH	00H

n = MIDI Channel Number : 0H - FH
kk = Note Number : 00H - 7FH
vv = Velocity : 00H - 7FH

● Note on

Status	Second	Third
9nH	kkH	vvH

n = MIDI Channel Number : 0H - FH
kk = Note Number : 00H - 7FH
vv = Velocity : 01H - 7FH

The DM-80-4/8 recognizes a Note on and generates the specified sound in the trigger play mode.
Received Velocity does not affect the level of the generated sound.
Note Numbers to be recognized can be set and stored on the disk.

When in the Tap Teach mode and the parameter Tap Teach Source is MIDI note, a Note on message having a Note Number within the specifed range can be recognized and used as a tap timing.

● Control Change

○ Foot type

Status	Second	Third
BnH	04H	vvH

n = MIDI Channel Number : 0H - FH
vv = Control value : 00H - 7FH 00H - 3FH = OFF
40H - 7FH = ON

When the parameter Record Trigger is MIDI, this message can be used as a trigger for recording.

■ System Real Time Message

When in the Tap Teach mode and the parameter Tap Source is set to MIDI Clock, the MD-80-4/8 uses the timing clock as the tap timing.

● Timing Clock

Status
F8H

● Start

Status
FAH

● Continue

Status
FBH

2.2 Message Recognized as Sync

◇ MIDI Time Code

■ System Common Message

○ MTC quarter frame message

F1 < message >

F1 = System Common status byte
< message > = 0nnndddd

nnn = Message Type
0 = Frame count LS nibble
1 = Frame count MS nibble
2 = Seconds count LS nibble
3 = Seconds count MS nibble
4 = minutes count LS nibble
5 = minutes count MS nibble
6 = Hours count LS nibble
7 = Hours count MS nibble and SMPTE Type

dddd = 4 bits of binary data for this Message Type

Frame count	xxxy yyyy	xxx : Reserved (= 0) yyyyy : Frame # (0 - 29)
Secouds count	xxyy yyyy	xx : Reserved (= 0) yyyyyy : Second (0 - 59)
Minutes count	xxyy yyyy	xx : Reserved (= 0) yyyyyy : Minutes (0 - 59)
Hour count	xyyz zzzz	x : Reserved (= 0) yy : Time code type 0 = 24 Frame/Second 1 = 25 Frame/Second 2 = 30 Frame/Second (Drop Frame) 3 = 30 Frame/Second (Non - drop) zzzzz : Hour (0 - 23)

When in the play or recording mode with the parameter Time Base set MTC, the recorder will run in synchronous with the MTC quarter frame mesage.

3. Transmitted Data

3.1 Generated and transmitted message

■ Channel Voice Message

● Note On

Status	Second	Third
9nH	kkH	vvH

n = MIDI Channel Number : 0H - FH
kk = Note Number : 00H - 7FH
vv = Velocity : 00H - 7FH 00H = Note OFF

When the parmeter Metronome is on and MIDI Click is on, the redorder will transmit the Note On in time to the metronome .
The Note Number and the velocity to be transimitted can be set and saved on the disk.

3.2 Message generated for sync

■ System Common Message

● Song Position Pointer

Status	Second	Third
F2H	llH	hhH

ll = Least significant : 00 - 7FH
hh = Most significant : 00 - 7FH

When the system parameter MIDI Clock output is on, the recorder sends this message in accordance with the tempo map.

■ System Real Time Message

When the system parameter MIDI Clock output is on, sends this message in accordance with the tempo map.

● Timing Clock

Status
F8H

● Start

Status
FAH

● Continue

Status
FBH

● Stop

Status
FCH

◇ MIDI Time Code

■ System Common Message

○ MTC quarter frame message

F1 < message >

F1 = System Common status byte
< message > = 0nnndddd

nnn = Message Type
0 = Frame count LS nibble
1 = Frame count MS nibble
2 = Seconds count LS nibble
3 = Seconds count MS nibble
4 = minutes count LS nibble
5 = minutes count MS nibble
6 = Hours count LS nibble
7 = Hours count MS nibble and SMPTE Type

dddd = 4 bits of binary data for this Message Type

Frame count	xxxy yyyy	xxx : Reserved (= 0) yyyyy : Frame # (0 - 29)
Secouds count	xxyy yyyy	xx : Reserved (= 0) yyyyyy : Second (0 - 59)
Minutes count	xxyy yyyy	xx : Reserved (= 0) yyyyyy : Minutes (0 - 59)
Hour count	xyyz zzzz	x : Reserved (= 0) yy : Time code type 0 = 24 Frame/Second 1 = 25 Frame/Second 2 = 30 Frame/Second (Drop Frame) 3 = 30 Frame/Second (Non - drop) zzzzz : Hour (0 - 23)

When the parameter MTC Output is on, the recorder sends the MTC quarter frame message while running.

Multi Track Disk Recorder

Model DM-80-4/8

MIDI Implementation Chart

Date : Nov. 7 1991

Version : 1.00

Function •••		Transmitted	Recognized	Remarks
Basic Channel	Default	1 – 16	1 – 16	
	Changed	1 – 16	1 – 16	
Mode	Default	Mode 3	Mode 3	
	Messages	×	×	
	Altered	*********	×	
Note Number	True Voice	0 – 127 *1	0 – 127 *1	
		*********	*2	
Velocity	Note ON	0	×	
	Note OFF	× 9n, v = 0	×	
After Touch	Key's	×	×	
	Ch's	×	×	
Pitch Bender		×	×	
Control Change	4 Foot Type		*3	Recording Trigger
Prog Change	True #	×	×	
		*********		
System Exclusive		*3	*3	
System Common	Song Pos	*3	×	
	Song Sel	×	×	
	Tune	×	×	
System Real Time	Clock	*3	*4	
	Commands	*3	*4	
Aux Messages	Local ON/OFF	×	×	
	All Notes OFF	×	×	
	Active Sense	×	×	
	Reset	×	×	

Notes

*1 Can be set and memorized.
*2 Same pitch at which it was recorded.
*3 Can be set to ○ or × and saved on the disk.
*4 Can be received only in the tap teach mode.
MTC can be set to ○ or × : Quarter frame message can be send and received.

Mode 1 : OMNI ON, POLY　　Mode 2 : OMNI ON, MONO　　○ : Yes

Mode 3 : OMNI OFF, POLY　　Mode 4 : OMNI OFF, MONO　　× : No

SPECIFICATIONS

ANALOG I/O

INPUT CONNECTORS
1/4" 3-conductor phone jacks, balanced or unbalanced

INPUT LEVELS
+4 dBm

INPUT IMPEDANCE
44k Ohms Balanced / 22k Ohms Unbalanced
Recommended Source Impedance <2K Ohms

INPUT A/D CONVERTERS
64x oversampling, delta-sigma converter, 16-bit linear

OUTPUT CONNECTORS
1/4" 3-conductor phone jacks, balanced or unbalanced

OUTPUT LEVELS
+4 dBm Balanced / -2 dBm Unbalanced

NON-CLIP MAXIMUM OUTPUT LEVEL
+22 dBm

OUTPUT IMPEDANCE
200 Ohms Balanced / 100 Ohms Unbalanced

OUTPUT D/A CONVERTERS
8x oversampling, 20-bit linear
0 dBm = 0.775 Vrms

CLICK OUTPUT
2-conductor, unbalanced; 470 Ohms Impedance, 5ppv

DIGITAL I/O

INTERFACE TYPE
AES/EBU Consumer (CP-340 Type II) standard
XLR or Coaxial
CD and DAT compatible

GENERAL

SAMPLING FREQUENCY:
48 kHz, 44.1 kHz, 32 kHz (selectable)

FREQUENCY RESPONSE
10 Hz - 22 kHz (-0.2dB~+0.3dB)

SIGNAL TO NOISE RATIO
Mix Output: >96 dB
Individual Outputs: >96 dB

DYNAMIC RANGE
>96 dB (one track at rated output)

TOTAL HARMONIC DISTORTION
<0.02% (A/D/A)

RECOMMENDED LOAD IMPEDANCE
>600 Ohms

CROSSTALK
>93dB

DISK DRIVE
100 Mbyte Hard Drive (one per 4 tracks)

MAXIMUM RECORDING TIME
Internal Disk – Total Per Four Tracks
16 Minutes @ 48 kHz
18 Minutes @ 44.1 kHz
25 Minutes @ 32 kHz

THEORETICAL DISK LIMIT
4 GByte (12 Hours @ 48 kHz)

DISPLAY
LED: 7 segment bar graph x 10

POWER CONSUMPTION
80 W

DIMENSIONS
482 (W) x 414 (D) x 179 (H) mm
19" x 16 5/16" x 7 1/16"

WEIGHT
DM-80-4
13.5 Kg.
29 lbs., 13 oz.
DM-80-8
15.5 Kg.
34 Lbs., 3 oz.

INCLUDED ITEMS

Owner's Manual
Booklet: SCSI compatible devices for DM-80
Power Cable
Connecting Cable (5m)

OPTIONS

Track Expansion Upgrade (DM-80-E)
Foot Switch (DP-2/6, Boss FS-5U)
Remote Controller (DM-80-R)
Fader Unit (DM-80-F)
Optical Disk Drive (MO-7)
Optical Disks:

- **Sony EDM-1DA0 (320 MByte per side)**
- **Sony EDM-1DA1 (290 MByte per side)**
- **Seiko/Epson EPM-C50 (320 MByte per side)**
- **Seiko/Epson EPM-C51 (290 MByte per side)**

Track Manager software for Apple Macintosh (DM-80-S)
Interface Box (IB-1)

In the interest of product improvement, specifications are subject to change without notice.

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For Germany

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der/die/das

Roland MULTI TRACK DISC RECORDER DM-80

(Gerät. Typ. Bezeichnung)

in Übereinstimmung mit den Bestimmungen der

Amtsbl. Vfg 1046/1984

(Amtsblattverfügung)

funk-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Roland Corporation Osaka/Japan

Name des Herstellers/Importeurs

For the USA

RADIO AND TELEVISION INTERFERENCE

WARNING — This equipment has been verified to comply with the limits for a Class B computing device, pursuant to Subpart J, of Part 15, of FCC rules. Operation with non-certified or non-verified equipment is likely to result in interference to radio and TV reception.

The equipment described in this manual generates and uses radio frequency energy. If it is not installed and used properly, that is, in strict accordance with our instructions, it may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J, of Part 15, of FCC Rules. These rules are designed to provide reasonable protection against such a interference in a rasidential installation. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by the following measure:

- Disconnect other devices and their input/output cables one at a time. If the interference stops, it is caused by either the other device or its I/O cable. These devices usually require Roland designated shielded I/O cables. For Roland devices, you can obtain the proper shielded cable from your dealer. For non Roland devices, contact the manufacturer or dealer for assistance.

If your equipment does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures.

- Turn the TV or radio antenna until the interference stops.
- Move the equipment to one side or the other of the TV or radio.
- Move the equipment farther away from the TV or radio.
- Plug the equipment into an outlet that is on a different circuit than the TV or radio. (That is, make certain the equipment and the radio or television set are on circuits controlled by different circuit breakers or fuses.)
- Consider installing a rooftop television antenna with coaxial cable lead-in between the antenna and TV. If necessary, you should consult your dealer or an experienced radio/television technician for additional suggestions. You may find helpful the following booklet prepared by the Federal Communications Commission:

"How to Identify and Resolve Radio — TV Interference Problems"

This booklet is available from the U.S. Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.

For Canada

CLASS B **NOTICE**

This digital apparatus does not exceed the Class B limits for radio noise emissions set out in the Radio Interference Regulations of the Canadian Department of Communications.

CLASSE B **AVIS**

Cet appareil numérique ne dépasse pas les limites de la classe B au niveau des émissions de bruits radioélectriques fixés dans le Réglement des signaux parasites par le ministère canadien des Communications.

Roland Corporation

26043562 '91-12-AGD1-11D

EXTERNAL SCSI DEVICES

EXTERNAL DRIVES A & B

Remember that external SCSI drives can be formatted with the DM－80 either as an "INTERNAL" group or and "EXTERNAL" group. If your added SCSI drive is formatted as "INTERNAL", it and the internal 100 Meg drive appear as one large drive to the DM－80. e.g. If you add an external 600 Meg drive and format it as an "INTERNAL" group, the DM－80 thinks it has one 700 Meg drive. It will seemlessly record across from the 100 Meg to the 600 Meg.
Using this configuration, the DM－80 MUST always have that drive connected in order to "boot up". If you remove it for repair or any other reason, the DM－80 will not function.

If however you format the 600 Meg drive as an "EXTERNAL" group, the DM－80 sees the internal 100 Meg drive and allows you to record up to 50 projects on it. It also sees the External 600 Meg drive as a separate drive and allows you to record up to 50 different projects on it. You can copy projects back and forth (assuming you have enough room on the internals). The advantage of this method is that the external drives can be disconnected without affecting the operation of the DM－80.

REVERSING EXTERNAL A & B DRIVES

IMPORTANT

If you reverse external A & B drives, i.e. If you format a drive for the "A" SCSI buss but connect it back to the "B" buss, while connected the "B" drive to the "A" port the DM－80 will not operated correctly. Upon first turning the unit on with the drives reversed, the DM－80 will "lock up" on the "now loading" screen. If you power down and turn the unit on again, the DM－80 will "lock up" in the very early boot stages. Should this occur, simply turn off the power and put the drives back to their correct SCSI port. No damage will have been done and the unit should boot up normally.
REMEMBER : Be sure and keep track of your external drives. Which is A and which is B.

- When you disconnect SCSI devices and then connect them again, be sure to connect them to the proper SCSI buss (Please use identification labels to distinguish SCSI devices.).
- When you disconnect SCSI devices in a group and then connect them again, be sure to connect all of them .
- Before you power up the DM－80, be sure to power up all connected SCSI devices.

EXTERNAL SCSI TERMINATION

About SCSI termination !

The standard SCSI specification requires that both ends of a SCSI buss or chain must be properly "terminated". This involves adding a set of resistors across each SCSI data line which are fed from 5 VDC. The DM－80 itself represents the beginning of the SCSI chain. It is properly terminated inside the unit. If however, you add additional drives externally they must be terminated correctly as well. But remember, only the last drive on the chain is to be terminated. e.g. If you have a 300 Meg External drive and a 600 Meg external drive connected to the "SCSI A" port on the DM－80, the last drive on the cable must be terminated.

Most drives are available with internal or external terminators.
Internal terminators are usually small in line resistor packs called "SIPS". They plug directly into sockets on the main controller circuit board of the drive itself.
External terminators are usually rectangular boxes which can be attached to a separate 50 pin Centronix connector on the rear panel of the drive. Other external terminators have a 50 pin connector on both sides so the terminator can be plugged on the drive and the cable from the DM－80 can be plugged into the terminator.

BE CAREFUL OF.....

DOUBLE TERMINATION :

Be sure that the last drive in the Chain is not double terminated. That means that it has internal terminator resistors installed as well as an external 50 pin terminator. You must remove either the internal SIPS or the external terminator package.

NO TERMINATION :

Be sure to check that the last drive is terminated either internally or externally, and that it is terminated correctly.

TERMINATOR POWER :

SCSI terminators MUST be provided with 5 VDC power in order to operate correctly. The DM－80 DOES NOT provide this terminator power for external devices. The power must come from the device itself. Some drives give a switch option to allow for the drive to provide power to the terminator. You must be sure that the drive is providing power to the terminator.
We have seen many customers who have added external terminators to their drives but the drives did not provide power. THIS IS WORSE than NO terminator at all. The DM－80 seems to exhibit many SCSI errors and can exhibit random "lock ups" and other problems if an Unpowered Terminator has been installed on an external device. Most drives provide power to the terminator resistors if you sue the SIPS packs directly on the circuit board. However, many drive housings do not provide terminator power to the rear connector.

Regarding how to install the SIPS packs directly on the circuit board, please contact the manufacturer of the SCSI device.

For Example :

The "PYTHON" 4mm Data DAT backup system in their small portable case DOES NOT provide external terminator power. They provide the external terminator, but the device does not power it. We have found that the DM－80 won't recognize the drive with the terminator installed because it is improperly terminated (not powered). So most people just remove the terminator and the DM－80 will then recognize the drive but this is still not the correct way to run your DM－80 for best DATA integrity.

If you are having other SCSI backup or disk drive problems, CHECK FOR PROPER TERMINATION AND TERMINATOR POWER.

CORRECTIONS

We apologize that there is a wrong description in the Owner's Manual of DM－80－4／DM－80－8. Please correct as follows.

■ Page 10 : The sentence in the "FOOT SWITCH".
(Wrong) Use a Roland DP－2／6, Boss FS－5U or equivalent pedal.
(Correct) Use a Roland DP－2／6, Boss FS－5U.

■ Page 10 : Delete the following the sentence in the "FOOT SWITCH".
The switch polarity is checked automatically on power up.

■ Page 15 : In the 7th line from the bottom.
(Wrong) SMPTE Linear Time Code
(Correct) SMPTE Longitudinal Time Code

■ Page 17 : In the bottom line.
(Wrong) 3・ Power off the DM－80.
(Correct) 3・ Power off SCSI, MIDI and SMPTE devices.
4・ Power off the DM－80.

■ Page 20 : "DM－80－8 USERS" in the 12th line from the bottom.
(Wrong) When formatting disks,
(Correct) When formatting disks in order to make a certain disk group,

■ Page 21 : In the 3rd line from the top.
(Wrong) Up to eight SCSI devices
(Correct) Up to eight SCSI devices including the DM－80

■ Page 21 : In the 4th line from the bottom.
(Wrong) If more than two devices in a single chain
(Correct) If more than two DM－80 racks in the SCSI EXT chain

■ Page 21 : Add the following sentence in the 15th line from the top.
Note : The device number of your SCSI tape backup unit must be set to either 1 or 2 for the SCSI EXT bus.

■ Page 23 : Add the following sentence at the bottom line.
Did you power up the DM－80 with the specified foot switch (Roland DP－2／6, Boss FS－5U) connected? Never connect anything but the specified foot switches.

■ Page 29 : "CLICK OUTPUT" in the 16th line from the bottom.
(Wrong) 5ppv
(Correct) 5V p-p

■ Page 29 : Add the following sentence in the 11th line from the bottom.
SMPTE LTC

INPUT LEVELS	0.5V p-p～3.0V p-p
INPUT IMPEDANCE	100K Ohm
OUTPUT LEVELS	1.3V p-p
OUTPUT IMPEDANCE	4.7K Ohm

REMOVABLE DISK DRIVES

Magneto－Optical disk drives (such as the Roland MO－7), Phase Change Rewritable－Optical disk drives and SyQuest hard disk drives are listed under the Removable Group in the Owner's Manuals of the DM－80－4／8 rack unit and the DM－80－R remote controller.
It is possible to connect Magneto－Optical disk drives, Phase Change Rewritable－Optical disk drives and SyQuest hard disk drives to the DM－80.
However, problems may occur with these types of drives in recording and playback due to the slow disk access times of these disk drives. For this reason, these disk drives are not suitable for recording or playing Projects.
However, these disk drives are suitable for use as back－up units for Projects by using the Copy Project command.
However, with the DM－80－8, the Copy Project command should be used if Magneto－Optical disk drives, Phase Change Rewritable－Optical disk drives or SyQuest hard disk drives have been connected to both the SCSI A and SCSI B busses. This is because the SCSI busses are completely independent and data cannot be transferred between them.

リムーバブル・グループのドライブ

DM－80－4／8 ラック・ユニットとDM－80－R リモート・コントローラーの取扱説明書には、リムーバブル・グループとして光磁気ディスク・ドライブや相変化書換型ディスク・ドライブやサイクエストのハード・ディスクが記載されています。
DM－80に光磁気ディスク・ドライブや相変化書換型ディスク・ドライブやサイクエストのハード・ディスクを接続することはできますが、これらのディスク・ドライブのディスク・アクセスが遅いため、レコーディング／プレイで支障をきたすことがあります。
この為、これらのディスク・ドライブはプロジェクトのレコーディング／プレイには適していません。しかしながら、コピー・プロジェクト・コマンドを使用することによって、これらのディスク・ドライブをプロジェクトのバックアップとして使用することには問題ありません。
ただし、DM－80－8をご使用の場合は、SCSI AバスとSCSI Bバスの両方に光磁気ディスク・ドライブや相変化書換型ディスク・ドライブやサイクエストのハード・ディスクを接続して、コピー・プロジェクト・コマンドを実行する必要があります。SCSIバスは完全に独立していますので、異なるSCSIバス間でデータのやり取りはできないからです。

SCSI compatible devices for DM-80-4/8 Ver.2
DM-80-4/8 Ver.2 に接続できるSCSI機器

8/1993

The following devices can be connected to the DM-80-4/8 by using the SCSI interface.

ローランドで動作確認を行なった機種として、次のものがあります。

FOR SCSI A&B Connectors

■Internal or External Group

【SCSI Hard Disks for the APPLE Macintosh】

The operation of the following products listed below have been checked by Roland.

下記のリストは、ローランドで動作確認をしたものです。

MICROPOLIS (Hardware Manufacturer)

1588	700M

CDC (Hardware Manufacturer)

94181-15	600M

MAXTOR (Hardware Manufacturer)

LXT-340S	330M
MXT-540SL	540M

FUJITU (Hardware Manufacturer)

M2692S	750M
M2694S	1G
M2266S	1.2G

HITACHI (Hardware Manufacturer)

DK312C	250M
DK314C	400M
DK-325C-57	570M
DK515C	600M
DK516C	1.2G
DK-315C-14	1.4G

Quantum (Hardware Manufacturer)

LPS105S	100M
120SC(ELS127S)	120M
LPS240S	240M
LPS525S	500M

SEAGATE (Hardware Manufacturer)

ST11200N	1G

HEWLETT PACKARD (Hardware Manufacturer)

C2234-300	300M

ALPS (Hardware Manufacturer)

DR311D	100M
DR312D	200M

CONNER (Hardware Manufacturer)

CP30100	120M

【日本国内のハード・ディスク／Hard Disks in Japan】

下記のリストは、ローランドで動作確認をしたものです。

*DM-80のSCSIコネクターはD-Sub 25ピンです。
これらのハード・ディスクをDM-80に接続するには、そのハード・ディスクのSCSIコネクターの形状とピン数をご確認のうえSCSIケーブルをご用意頂く事になります。
詳しくは、ローランド・サービスあるいはお客様相談窓口までお問い合わせください。

ヤノ電器株式会社

HyperHD240	240M
HyperHD330	330M
HyperHD500C	500M
HyperHD770	750M
HyperHD1000C	1G

株式会社キャラベルデータシステム

AV-250HG	250M
AV-400HG	400M
AV-570SD	570M
AV-12016HG	1.2G
AV-1400SD	1.4G
CA-6016SC	1.2G

Σ-100	100M
Σ-120	120M
Σ-200	200M
Σ-240	240M
Σ-400	400M

株式会社ハイパークラフト

Mac DIRECT F-1200	1.2G

■Removable Group

The following Magneto-Optical disk drive is suitable for Project recording or Playback.

<<5 inch>>
Alphatronix INSPIRE Ⅱ

The following Phase Change Rewritable-Optical disk drives,Magneto-optical disk drives and SyQuest hard disk drives are not suitable for Project recording or Playback. However,they can be used as backup devices for Projects by using the Copy Project command.

下記の相変化書換型ディスク・ドライブや光磁気ディスク・ドライブやサイクエストのハード・ディスクは、プロジェクトのレコーディング／プレイには適していません。しかしながら、コピー・プロジェクト・コマンドを使用する事によって、プロジェクトのバックアップとして使用することが出来ます。

【Phase Change Rewitable-Optical Drives】

Matsusita Electric Industrial Co.,Ltd
(Panasonic)
LF-7110 (For Japan)
LF-7010 (for USA and Canada)
LF-7010E (For Europe and England)

Available removable disks/使用できるディスク
(Panasonic)
LM-D702 (Except Japan/日本以外)
LM-D702W (Except Japan/日本以外)
LM-D712 (Japan only/日本国内のみ)
LM-D712W (Japan only/日本国内のみ)

Model numbers containing "W" are double-sided disks.Model numbers without a "W" are single-sided disks.One side of a disk can contain 500MByte of data.

W付きのディスクは両面使用でき、Wなしのディスクは片面のみです。片面500MByteです。

【Magneto-Optical Drives】

<<5 inch>>

ROLAND Co. *	MO-7
SONY Co. *	RMO-S550
ヤノ電器	MO650C
RICOH	RS-9200EX
SHARP	JY-7500

* Available removable disks/使用できるディスク
(Sony)
EDM-1DA0 (320MByte per side)
EDM-1DA1 (290MByte per side)
(Seiko/Epson)
EPM-C50 (320MByte per side)
EPM-C51 (290MByte per side)

<<3.5 inch>>

SONY CO.	RMO-S350
ヤノ電器	MO128C
緑電子株式会社	Optimac OMC120
RICOH	RS-3100E

Available removable disks/使用できるディスク
(Sony)
EDM-128 (128MByte single-sided disk)

【SCSI Hard Disks for the APPLE Macintosh】

SyQuest (Hardware Manufacturer)

SQ-555	44M	Removable HD
SQ-5110	88M	Removable HD

FOR SCSI EXT Connector

SCSI devices other than the following tape backup ones can't be connected.
SCSI EXTに接続できるのは下記のテープ・バックアップ機器のみです。

【4mm DAT】

WangDAT (Hardware Manufacturer)*
1300

ARCHIVE (Hardware Manufacturer)*
4520NT
4330XT
Python

Roland Co*
DDS-80 (Japan only/日本国内のみ)

* We recommend you to use data-grade DDS DAT cassettes.
* データ・グレードDDS DATのカセットを使用することを推奨します。

【8mm Streamer】

Exabyte (Hardware Manufacturer)
EXB-8200